BABAYEVA, A.V.

8C

PROCESSES AND PROPERTIES INDEX

Absorption spectra of complex compounds. I. A. V. BABAEVA (Ann. Sect. Platine, 1939, No. 16, 87—107).—The ultra-violet absorption spectra of 21 Pt complexes were studied. All gave a max. at 285 mμ., and all complexes with acidic substituents (Cl, NO_2) in the inner sphere exhibited a second max. at 335 mμ. Complexes not containing basic radicals (NH_3, NH_2OH) gave a third max. at 400—410 mμ. The ultra-violet spectrum is not affected by *cis-trans*-isomerism. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

BABAYEVA, A.V.

6

Oxidation of complex compounds of divalent platinum with hydrogen peroxide. A. V. Babaeva. *Compt. rend. acad. sci. U. R. S. S.* 23, 653-7(1939); cf. *C. A.* 34, 2729⁸.—By the action of 30% H_2O_2 *cis*- and *trans*-$[(NH_3)_2PtCl_2]$ and *cis*-$[(NH_3)_2Pt(NO_2)_2]$ are oxidized to the corresponding hydroperoxides $[(NH_3)_2Pt(O_2H)_2X_2]$, which are converted into $[(NH_3)_2Pt(OH)_2X_2]$ by H_2O. Only $[(NH_3)_2Pt(OH)_2(NO_2)_2]$ is formed by the action of H_2O_2 on *trans*-$[(NH_3)_2Pt(NO_2)_2]$. H_2O_2 oxidizes *cis*-$[(C_5H_5N)_2PtCl_2]$ to $[(C_5H_5N)_2Pt(OH)_2Cl_2]$ but has no effect on *trans*-$[(C_5H_5N)_2PtCl_2]$. B. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BABAYEVA, A.V.

Bc

Oxidation of complex compounds of platinum with hydrogen peroxide. A. V. BABAEVA (Compt. rend. Acad. Sci. U.R.S.S., 1939, 24, 145—148).— K_2PtCl_6, when cooled with excess of 30% H_2O_2, gives $K_2[PtCl_4(OH)_2]$ (I) which with HCl yields either K_2PtCl_6, KCl, and $KH[PtCl_2(OH)_4]$ or $H_2[Pt(OH)_6]$. Hydrolysis of (I) gives $K[PtCl_3(OH)_2H_2O]$. $K_2Pt(NO_2)_4$ with 30% H_2O_2 yields $K_2[Pt(NO_2)_4(OH)_2]$ and $KH[Pt(NO_2)_3OH]$. $[(NH_3)_4Pt]Cl_2$ with 30% H_2O_2 gives a compound (Pt 51·60, N 15·00, total Cl 21·24, ionisable Cl 17·00%) whilst $[(NH_3)_4Pt](NO_3)_2$ gives $[(NH_3)_4Pt(OH)_2](NO_3)_2$. Oxidation of $[(NH_3OH)_4Pt](OH)_2$ with H_2O_2 yields pure $H_2[Pt(OH)_6]$. F. R. G.

Spectral analysis of small amounts of iridium and rhodium in platinum preparations. A. V. Babaeva, V. I. Belova, and S. A. Borovik (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 37, 101—103).—Ir and Rh are determined in Pt compounds by their spark spectra, ~3 mg. of material being fixed in a hollow in the lower C electrode with collodion. The method is sensitive to 0·001% with an accuracy of ±4·5%. M. H. M. A.

БАБАЕВА А.В.

Absorption spectra of complex compounds of the noble metals. Chlorometallates of the platinum group. A. V. Babaeva (*Bull. Acad. Sci. U.R.S.S., Cl. Sci. Chim.*, 1943, 171—177).—Absorption spectra have been studied in the region 2000—6000 A. for dil. (0·001—0·03M) aq. solutions of $(NH_4)_3[RhCl_6].H_2O$; $(NH_4)_2[PdCl_6]$; $(NH_4)_3[IrCl_6].H_2O$; $(NH_4)_2[IrCl_6]$; $K_2[PtCl_4]$; and $Na_2[PtCl_6].6H_2O$. These compounds each have three absorption bands in the range studied, the positions of which are governed by the at. no. of the "central atom" of the complex. V. H.

Also included in: Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, No. 3, 1943.
Inst. Gen. & Inorganic Chem., AS.

BABAYEVA, A. V.

"Absorption Spectra of Pt. Diammines," Dok. AN 40, 1943.

Mbr. Lab. Stereo-chemistry of complex Compounds of Platinum Materials. Inst. Gen. & Inorganic Chemsistry im. N. S. Kurnakov, Dept. Chem. Sci., AS.

BABAYEVA, A.V.

PROCESSES AND PROPERTIES INDEX

Absorption spectra of amido- and amino-complexes of bivalent Pt. A. V. Babaeva. *Doklady Akad. Nauk S. S. S. R.* 40, 70-4(1943). *Compt. rend. acad. sci. U. R. S. S.* 40, 61-5(1943)(in English); cf. C. A. 22, 2880[8]; 28, 42[9]; 29, 1010[8]. The absorption spectra are plotted for 0.001 to 0.05 *M* aq. solns. of various Pt complexes for the wave-length interval 2000-6000 A. In some cases, the 1st and 3rd absorption bands were too poorly developed to be observed with certainty. The wave lengths in A. for the 1st, 2nd and 3rd absorption max. were as follows: $K_2[PtBr_4]$ —, 4500, 3950; $K_2[Pt(NCS)_4]$ —, 3600, 2880; $[Pt.4SC(NH_2)_2]Cl_2$ —, 3200, —; $K_2[Pt(NO_2)_4].2H_2O$ —, 3130, —; $K_2[Pt(C_2O_4)_2].2H_2O$ —, 2800, —; $[Pt(NH_3)_4]Cl_2$ —, 2820, —; $K_2[PtCl_4]$ 4700, 3920, 3280; $K_2[PtCl_3NO_2]$ 4720, 3910, 3260, $K_2[Pt(NO_2)_2Cl_2]$ —, 3100, —; $K_2[Pt(NO_2)_3Cl].2H_2O$ —, 3150, —; $K_2[Pt(NO_2)_4].2H_2O$ —, 3130, —. Evidently, the substitution of 1 Cl atom in $K_2[PtCl_4]$ by a nitro group caused no change in the position of the absorption max., while replacement of a 2nd Cl atom by NO_2 caused a large change in the spectrum. Introduction of the 3rd and 4th nitro groups, on the other hand, caused relatively minor changes. I. W. Perry

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BABAYEVA, A.V.

Ca

Absorption spectra of complex compounds. Cis-trans isomerism of complex Pt compounds of the diamine series and light absorption. A. V. Babaeva. *Doklady Akad. Nauk S. S. S. R.* 40, 107-70(1943). *Compt. rend. acad. sci. U. R. S. S.* 40, 148-51(1943)(in English); cf. C. A. 38, 1420⁹.—Absorption spectra, in the region 2200-6000 A. for 3 pairs of cis-trans isomers of empirical formula: $[(NH_3)_2PtCl_2]$ (I), $[(NH_3)_2NO_2PtCl]$ (II), $[(NH_3)_2Pt(NO_2)_2]$ (III) are given. The longest of the 3 wave-length bands were diffuse, while the 2nd and 3rd bands were more clear cut. The maximums of the 1st and 2nd bands of the trans isomer of I were 90-100 A further toward the longer wave lengths than those of the cis form. With II and III, the corresponding shift was 220-240 A. Absorption curves can serve as useful aids in confirming the identity of isomers. L. Kuhn

Inst. Gen. & Inorg. Chem., AS

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA БАБАЄВА, А.В. 3

Absorption spectra of complex noble-metal compounds. II. A. V. Babaeva. *Izvest. Sektora Platiny i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk. S.S.S.R.* (*Ann. secteur platine, Inst. chim. gén.*) No. 20, 115-24(1947); cf. *C.A.* 38, 6196[4].—Light absorption curves of $(NH_4)_3RhCl_6$, $(NH_4)_2PdCl_6$, $(NH_4)_2IrCl_6$, K_2PtCl_6, and Na_2PtCl_6 were studied at 600-220 mμ. In this interval these compds. had 3 absorption bands. From the maxima of the absorption curves it is concluded that a change in the central ion of the complex affects the position of the entire absorption region of the compd. and particularly the position of the first 2 bands, counting from the long-wave end of the spectrum. The absorption region of complexes of metals with higher at. no. was shifted toward the shorter waves as compared with complexes of metals in the same periodic row but of smaller at. no. This is apparently attributable to the excitability of the electrons in the *d*-shell. In the same wave-length interval was studied the light absorption of aq. solns. of K_2PtBr_4, K_2PtCl_4, $K_2Pt(NCS)_4$, $K_2PtNO_2Cl_3$, $K_2Pt(NO_2)_2Cl_2$, $K_2Pt(NO_2)_3Cl$, $K_2Pt(NO_2)_4$, $K_2Pt(C_2O_4)_2$, $[(thiourea)_4Pt]Cl_2$, and $[(NH_3)_4Pt]Cl_2$. Of these K_2PtBr_4, K_2PtCl_4, and $K_2PtNO_2Cl_3$ had 3 or even 4 absorption bands. $K_2Pt(NCS)_4$ had 2 bands while the rest of these compds. had only one and usually in the region between 315 and 280 mμ.

M. Hosch

БАБАЕВА, А. В.

9

***Spectroscopic Analysis of Small Quantities of Iridium and Rhodium in Platinum Products.** A. V. Babaeva, V. I. Belova, and S. A. Borovik (*Izvest. Sekt. Platiny*, 1947, (**20**), 168–171; *C. Abs.*, 1950, **44**, 5262). (In Russian). This method is particularly adapted for determining Ir and Rh in intermediate products of Pt refining. Two procedures were worked out, one using an arc spectrum and the other a spark. The arc spectrum gave a probable error of 10–20% in determining Ir and Rh. The lower limit for determining these metals was 0·01%. The arc spectrum required too much of the precious metal, and therefore the spark method proved preferable for routine analyses. For the spark spectrum purified C electrodes of 3 mm. dia. were used. The lower electrode had a cavity 0·4–0·5 mm. deep to receive the sample, weighing 0·003 g. The spark gap was 3·5 mm., exposure 15–45 sec. For Ir concentrations of 0·5–0·05%, best results were obtained with the line pair Ir 3220·79 and Pt 3230·29 Å, and for < 0·05% Ir with Ir 3220·79 and Pt 3212·00 Å. For Rh the preferred lines were Rh 3396·82 and Pt 3427·02 Å. For < 0·005% Rh it was preferable to use the line pair Rh 3434·9 and Pt 3427·02 Å. By this procedure the average probable error in determining Rh was ±8·5%, and in determining Ir ±7·8%.

БАБАЕВА, А. V.
M

SPECTROSCOPIC DETERMINATION OF PALLADIUM IN PLATINUM, PLATINUM IN PALLADIUM, AND RHODIUM IN IRIDIUM. A. V. Babaeva, V. I. Belova, and L. A. Nazarova (Izvest. Sekt. Platiny, 1947, (20), 172-175; C. Abs., 1950, 44, 5263).--(In Russian). The determinations were carried out in a condensed spark spectrum. For 5-0.7% Pd in Pt the preferred lines were Pd 3027.91, Pt 3017.88 Å., and for 0.7-0.001% Pd the lines were Pd 3403.59, Pt 3427.92 Å. For 5-0.2% Pt in Pd the preferred lines were Pt 2997.96, Pd 3002.66 Å., and for <0.2% Pt, Pt 2997.96, Pd 2999.56 Å. For 1.0-0.001% Rh in Ir the preferred lines were Rh 3396.82, Ir 3310.54 Å. Although the lines of this pair are far apart, their intensity is comparable. If desired the pair Rh 3434.90, Ir 3437.05 Å. can also be used.

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ma. BABAYEVA, A.V.

Analysis

***Spectroscopic Determination of Iridium, Platinum, and Palladium in Refined Rhodium.** A. V. Babaeva and E. S. Lapir (*Izvest. Sekt. Platiny*, 1948, (22), 145-148; *C. Abs.*, 1950, 44, 10583). [In Russian]. Cf. *ibid.*, 1947, (20), 168; *M. A.*, 10, 674. For the detn. of these metals an activated A.C. arc and highly purified C electrodes were used in a Hilger quartz spectrograph. Ir was determined from its 3220·79 Å. line. For comparison the Rh line at 3207·20 Å. was used for Ir contents of 1-0·1%, and the Rh 3200·09 Å. line for Ir contents of 0·1-0·01%. Pt was determined from its 2997·96 Å. line. For comparison the Rh line at 3008·03 Å. was used for Pt contents of 0·1-0·01%, and Rh line 2991·74 Å. for Pt below 0·01%. The preferred line for Pd was 3242·71 Å. Care must be exercised because of the close proximity of the Ti line at 3241·989 Å. The Rh line at 3237·68 Å. was used for comparison. For 0·111-0·861% Ir the average error was ±3·33%; for 0·0038-0·080% Pt the average error was ±6·70%, and for 0·003-0·1% Pd the average error was ±10·5%.

CA BABAYEVA, A. V.

Spectral determination of small quantities of iron in platinum and palladium. A. V. Babaeva and R. S. Lapir. *Izvest. Sektora Platiny i Drugikh Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* No 23, 94-6(1949).—Fe contents of 0.001-0.05% were detd. spectrographically by means of Pt and Pd lines for comparison. To det. Fe in Pt the lines used were: Fe 3020.640, Pt 3005.783 (arc); Fe 3020.640, Pt 3022.847 (arc); Fe 2599.396, Pt 2628.33 (spark). For Pd the lines were Fe 2973.23, Pd 3021.749 (arc); Fe 2994.429, Pd 3021.749 (arc); Fe 2994.44, Pd 2577.10 A. (arc). For traces of Fe in Pt, the av. error was 9% and for Fe in Pd 8%. M. Hosch

CA BABAYEVA, A.V

Spectral determination of small quantities of platinum and palladium in refined silver. A. V. Babaeva and E. S. Lapir. *Izvest. Sektora Platiny i Drugikh Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* No. 23, 97-100(1949).—For detg. Pt and Pd in Ag the 3-standard method was used. A total of 15 standards was used contg. 0.0005-0.200% Pt and Pd each. The standard alloys were forged and drawn into 3-4 cm. lengths having a square cross section of 2.5 sq. mm. and one end wedge-shaped. The wires were used as electrodes. For detg. concns. of 0.02-0.2% the following lines were used: Pt 2702.40, Ag 2721.77; Pt 2733.96, Ag 2721.77; Pd 3480.77, Ag 3501.94; Pd 3460.77, Ag 3501.94; and for concns. of 0.001-0.02% Pt 2097.97, Ag 3009.12; Pt 2997.97, Ag 2721.77; Pd 3480.77, Ag 3542.61; Pd 3242.70, Ag 3130.01 A. M. Hosch

C BABAYEVA, A.V.

3

Ultraviolet absorption spectra of bivalent palladium complexes. A. V. Babaeva and M. A. Mosyagina. *Izvest. Sektora Platiny i Drugikh Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* No. 24, 120-32 (1949); cf. C.A. 43, 4653h.—Of the compds. investigated $[Pd(NH_3)_4]Cl_2.H_2O$ was stable in aq. soln. At concns. of 0.02-0.1 *M* it had one band with a max. at 295 mμ. $K_2[Pd(NO_2)_4]$ had a wide band at 252; $(NH_4)_2[PdCl_4]$ 2 bands with max. at 424 and 302; $K_2[Pd(NSC)_4]$ a broad band with a max. at 307; $Na_2[Pd(C_2O_4)_2].2H_2O$ a band with a max. at 380; $[Pd(NH_3)_2Cl_2]$ a band with a max. at 385, and a min. at 310 mμ. M. Hosch

BABAYEVA, A. V.

"Absorption Spectra of Pt^{II} and Pd^{II} Complexes," Dok. AN 64, 1949.

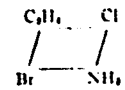
Mbr. Lab. Stereo-chemistry of Complex Compounds of Platinum Materials. Inst. Gen. & Inorganic Chemistry im. N. S. Kurnakov, Dept. Chem. Sci., AS.

BABAYEVA, A.V.

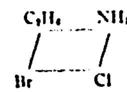
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ultraviolet absorption spectra of geometric isomers of complex compounds of bivalent platinum and palladium. A. V. Babaeva and [illegible] *Doklady Akad. Nauk S.S.S.R.* 64, [illegible](1949). Cis and trans isomers were studied in 0.0005–0.05 *M* soln., depending on the intensity of absorption, between 220 and 400 mμ. (1) The absorption spectra of [$Pt(NH_3)_2Br_2$], with a few drops of HBr added to prevent hydrolysis, are identical with those of the corresponding Cl compds., except for a bathochromic shift. The cis isomer has a broad max. around 310 mμ, log ε = 2.02, whereas the trans isomer has 2 bands, at 270 mμ, log ε = 2.20, and at > 320 mμ. (2) The *cis*-[$Pt(NH_2OH)_2(NO_2)_2$] shows almost continuous absorption, increasing with decreasing wave length, whereas the trans has, moreover, a distinct band with a flat max. between 250 and 265 mμ, log ε = 3.30. Both isomers have a hint of a band around [illegible] mμ, evidently due to the NO_2 group. The curve of the trans compd. is shifted to longer waves relative to the cis [illegible]. (3) The absorption curves of *cis*- and *trans*-[$Pt(NH_2OH)_2(NH_3)_2$]Cl_2 are almost identical, with one band at 270 mμ, log ε = 1.80. In the min., log ε of cis is somewhat greater than for trans. (4) *trans*-[$Pt(C_2H_4)(NH_3)Cl_2$] has 2 bands, at 300 mμ, log ε = 3.04, and at 265 mμ, log ε = 3.22; the cis isomer has only one band with max. at 250 mμ, log ε = 3.28. (5) *trans*-[$Pt(C_2H_4)(NH_3)BrCl$], configuration



has 2 bands, max. at 254 mμ, log ε = 3.32, and at 300 mμ, log ε = 3.04; the cis isomer,



has only one band, max. at 258 mμ, log ε = 3.36. (6) The spectra of *cis*- and *trans*-[$Pd(NH_3)_2Cl_2$], of which the 1st is unstable and tends to isomerize spontaneously into the 2nd, are almost identical, with only a very slight difference in log ε; one broad band, max. at 360 mμ. Addn. of HCl shifts the curve to longer waves. N. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BABAYEVA, A.V.

PROCESSES AND PROPERTIES INDEX

Ultraviolet absorption spectra of solutions of complex oxalates of bivalent metals. A. V. Babaeva and M. A. Mosyagina. *Doklady Akad. Nauk S.S.S.R.* 64, 823-6 (1949).—The following absorption wave lengths λ, in mμ (and log ε) were found in solns. stabilized by a few drops of $K_2C_2O_4$ soln., added also to the blank soln. $K_2[Mn(C_2O_4)_2].2H_2O$ (I) (0.1 *M*) one band, max. < 245 (~2.20); $K_2[Fe(C_2O_4)_2].2H_2O$ (II) (0.005-0.0001 *M*), broad band, max. 256 (3.40); $K_2[Co(C_2O_4)_2].6H_2O$ (III) (0.01-0.001 *M*), min. at 410, followed by rise to 230; $K_2[Ni(C_2O_4)_2].6H_2O$ (IV) (0.04-0.005 *M*), narrow band, max. 392 (1.80), min. 343 (1.04), rise towards shorter λ; $K_2[Cu(C_2O_4)_2].2H_2O$ (V) (0.025-0.001 *M*), narrow band, max. 255 (3.56); $K_2[Zn(C_2O_4)_2].5H_2O$ (VI) (0.001-0.005 *M*), absorption below 320, ε increasing with decreasing λ; $Na_2[Pd(C_2O_4)_2].2H_2O$ (VII) (0.01-0.0005 *M*), broad band, max. 320 (2.02), curve rising towards shorter λ; $K_2[Pt(C_2O_4)_2].2H_2O$ (VIII), broad band, max. 280 (3.58); $K_2[Cd(C_2O_4)_2].2H_2O$ (IX) (0.002 *M*), no absorption down to 220; $K_2[Sn(C_2O_4)_2].2H_2O$ (X) (0.1-0.001 *M*), between 350 and 230 structureless absorption, ε increasing rapidly with decreasing λ; $K_2[Pb(C_2O_4)_2].2.5H_2O$ (XI) (0.001 *M*), no absorption down to 250. Complexes of central atoms with unpaired *d*-electrons (II, III, IV, V, VII, VIII) show absorption in the visible and distinct bands in the ultraviolet, whereas elements with paired *d*-electrons (VI, IX, X, XI) do not absorb in the visible, and their ultraviolet absorption shows no band structure. The increasing stability of the dsp^2 bonds is reflected in the increasing frequency of the position of the max. in the series IV-VII-VIII. The absorption limit moves to shorter λ in the series II-III-IV. N. Thon

ASM-SLA METALLURGICAL LITERATURE CL

BABAYEVA, A. V. FA 29/49T7

USSR/Chemistry - Spectra, Absorption Feb 49
Chemistry - Oxalates

"Absorption Spectra of Solutions of Complex Oxalates of Bivalent Metals in the Ultraviolet Region," A. V. Babayeva, M. A. Mosyagina, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 6

Continuation of study on influence of the central atom on the character of the spectra of absorption for solutions of complex compounds of bivalent metals. Submitted by I. I. Chernyayev, 29 Nov 48.

29/49T7

BABAYEVA, A. V.

"Absorption Spectra of Pt^{IV} Diammines," Dok. AN 65, 1949.

Mbr. Lab. Stereo-chemistry of Complex Compounds of Platinum Materials. Inst. Gen & Inorganic Chemistry im. N. S. Kurnakov, Dept. Chem. Sci., AS.

BABAIEV, A. V.

A1

Absorption spectra of isomeric diammines of quadrivalent platinum. A. V. Babaev (*C. R. Acad. Sci., URSS*, 1949, **66**, 497–500).—A no. of diammine compounds of Pt^{II} give u.-v. absorption curves in which the *trans*-isomers show a noticeable shift in the longer-λ region of the spectrum in comparison with the corresponding *cis*-isomers. The use of this observation in determining the orientation of Pt^{II} complexes and their oxidation products is discussed. Observations on the series $[Pt(NH_3)_2(NO_2)_2Br_2]$, $[Pt(NH_3)_2(NO_2)ClBr]$, $[Pt(NH_3)_2(NO_2)_2Cl_2]$, $[Pt(NH_3)_2(NO_2)_2NO_3Cl]$, and $[Pt(NH_3)_2(NO_2)_2(OH)_2]$ shows that a similar shift occurs with Pt^{IV} compounds. H. Tauber.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BABAYEVA, A.V.

PA 41/49T2

USSR/Chemistry - Diamines Apr 49
Chemistry - Spectra, Absorption

"Absorption Spectra of Isomeric Diamines of Tetravalent Platinum," A. V. Babayeva, 4 pp

"Dok Ak Nauk SSSR" Vol LXV, No 4

Investigated the infuence of geometric configuration of molecules of complex compounds upon absorption spectra of their solutions. Studied isomeric dibromo-, dichloro-, chlorobromo-, nitrochloro-, and dihydroxy-compounds of the Blomstrand salt type. Discovered a shift in the region of light absorption toward the lower

41/49T2

USSR/Chemistry - Diamines (Contd) Apr 49

frequencies during transfer from cis-isomers to trans-isomers in compounds of tetravalent platinum of the diamine series. Submitted by Acad I. I. Chernyayev, 2 Feb 49.

41/49T2

W. M. Sternberg

CA [illegible], A. V.

6

Platinum *cis*-dihydroxylamine chloride. A. V. Babaeva and M. A. Mosyagina. *Doklady Akad. Nauk S.S.S.R.* 74, 255-8(1950).—The reaction K_2PtCl_4 + 2 NH_2OH → 2 KCl + $[Pt(NH_2OH)_2Cl_2]$ (I) was carried out successfully under "mild" conditions preventing formation of $[Pt(NH_3)_4][PtCl_4]$-type compd. Heating and diln. must be avoided. Introduction of more than 2 mols. NH_2OH into the complex was prevented by the use of $NH_2OH.AcOH$ instead of the usual $NH_2OH.HCl$ and K_2CO_3. The reagent was added in 10-20% excess to a soln. of K_2PtCl_4 in a small amt. of H_2O. After 24 hrs., a brown ppt. was filtered off, and the filtrate was acidified with a little dil. HCl and evapd. to dryness in a vacuum desiccator over concd. H_2SO_4, without heating; attempts to heat resulted in formation of more of the brown ppt. I, light-yellow needles, was extd. from the dry residue with Me_2CO and thus sepd. from a noncryst. yellow paste. The aq. soln. of I is a nonelectrolyte. About 25% of crude I could be obtained also with $NH_2OH.HCl$ and Na_2CO_3, but about 40% of it remains in the paste, and the rest is in the brown ppt.; the latter, contrary to previous statements (*Gmelin* 1915, p. 540) is certainly not $[Pt(NH_2OH)_2(OH)_2]$, as it contains '0% Cl. I was identified as the cis isomer with the aid of Kurnakov's $CS(NH_2)_2$ reaction, which gave the yellow $[Pt(th)_4]Cl_2$ (th = $CS(NH_2)_2$), whereas the orange-yellow trans isomer (prepd. by the reaction $[Pt(NH_2OH)_4]Cl_2$ + 2 HCl → $[Pt(NH_2OH)_2Cl_2]$ + 2 $NH_2OH.HCl$) gives white $[Pt(th)_2(NH_2OH)_2]Cl_2$. Further confirmation was obtained by Jørgensen's reaction with C_5H_5N (py) which gave $[Pt(NH_2OH)_2py_2]Cl_2$ and further, on heating with HCl, *trans*-$[Pt(py)(NH_2OH)Cl_2]$, whereas the trans isomer is known to give a mixt. of *trans*-$[Pt(py)_2Cl_2]$ and $[Pt(NH_2OH)_2Cl_2]$. The elec. cond. of *cis*-I increases linearly with time, whereas that of the trans isomer levels off, a behavior entirely analogous to that of *cis*- and *trans*-$[Pt(NH_3)_2Cl_2]$. The ultraviolet absorption curves are in agreement with the rule that the absorption bands of the trans isomer are shifted to longer waves as compared with those of the cis isomer: *cis*-I has maxima at 324 and 265 mμ, as against 356 mμ and 300 mμ for the trans isomer. *cis*-I is very easily sol. in H_2O, as against a soly. of 3.81 g./100 g. soln. (at 25°) for trans. Crystallographic data are: cis, triclinic or monoclinic, extinction angle 22°, n_1 = 1.782, n_2 = 1.76; trans, orthorhombic, pleochroism from colorless to orange, n_1 > 1.782, n_2 = 1.78. N. T.

1951

BABAYEVA, A V

USSR

Platinum cis-dihydroxylamine dichloride. A. V. Babaeva, M. A. Mosyagina, and M. A. Shulkina. *Trudy Sektora Platiny i Drug. Blagorod. Metal., Akad. Nauk S.S.S.R., Inst. Obshchei i Neorg. Khim.* No. 20, 48-61(1951); cf. *C.A.* 45, 3277i.—*cis*-[$Cl_2Pt(NCMe)_2$] (I) and *cis*-[$Cl_2Pt(NCEt)_2$] (II) were warmed with an excess of NH_2OH, in the hope of forming *cis*-[$(NH_2OH)_2Pt(NCR.NH_2OH)_2$]$Cl_2$ (III). Analysis of the black ppt. showed that not III but [$(NH_2OH)_2PtCl$-O-$PtCl(NH_2OH)_2$] was formed. The green supernatant liquid was thought to contain some III. Pptn. of the corresponding iodide was attempted with KI. Analysis of this ppt. showed that it was K_2PtI_4. K_2PtCl_4 was dissolved in very little H_2O and a soln. of NH_2OH acetate (10-20% excess) gave over a period of 21 hrs. violet crystals of [$Pt(NH_2OH)_4$][$PtCl_4$], which upon treatment with HCl gave [$Pt(NH_2OH)_2Cl_2$] (IV), sol. in acetone, H_2O, and dioxane. *trans*-IV with thiourea gives *trans*-[$Pt(Thio)_2(NH_2OH)_2$]Cl_2 white needles, *cis*-IV gives [$Pt(Thio)_4$]Cl_2, yellow prisms. By Jörgensen reaction with Py, *cis*-IV gives *cis*-[$Pt(NH_2OH)_2Py_2$]Cl_2 (V), which reacts with K_2PtCl_4 to give pink [$Pt(NH_2OH)_2Py_2$][$PtCl_4$]. V upon heating with HCl gives *trans*-[$PtNH_2OHPyCl_2$] yellow prisms. And similarly, *trans*-IV with Py furnishes the *trans*-V; this treated with HCl gives two nonelectrolytes, $PtPy_2Cl_2$ and IV. W. L.

CA BABAYEVA, A.V.

6

Geometric isomerism in the series of acidocomplex platinum compounds. A. V. Babaeva, N. I. Ushakova, and I. S. Sulnicheva. *Doklady Akad. Nauk S.S.S.R.* 81, 833-6(1951). $K_2[Pt(NO_2)_3Cl_3]$ synthesized according to Vèzes (*Compt. rend.* 115, 2, 44(1892)), i.e. by oxidation of $K_2[Pt(NO_2)_3Cl]$ with gaseous Cl_2, represents a compd. (I) differing in refractive index, d., dielec. const., and soly., from the compd. (II) of the same chem. compn. synthesized in the way described by Chernyaev (*C.A.* 28, 3320[9]), i.e. by oxidation of $K_2[Pt(NO_2)_4]$ with HNO_3, followed by treatment of the $K_2[Pt(NO_2)_3(NO_3)_3]$ with HCl. On genetic grounds, isomer I should have all 3 identical substituents in a meridian plane of the octahedron, whereas in isomer II the 3 identical substituents should be located at the corners of the same face. This is confirmed by measurements of the elec. cond.; II has the higher initial cond., which remains const., whereas I has a lower initial cond., which increases with time. The configurations of the 2 isomers are further confirmed by ultraviolet absorption spectra: the absorption curve of the trans isomer I is shifted to longer waves relative to the cis isomer II. Isomer I appears in the form of lemon-yellow needles, with the refractive indexes n_α = 1.791, n_β = 1.701, n_γ = 1.718, d. 3.1515, dielec. const. 5.975, soly. in H_2O (at 25°) 5.35%, max. of absorption at 2780 Å; the corresponding consts. of II (bright-yellow prisms) are: 1.844, 1.791, 1.755; 3.2290; 6.075; 8.24; 2700. With $Me_3N.HCl$, both isomers form $(Me_3NH)_2[Pt(NO_2)_3Cl_3]$; that from I is yellow; that from II, pale yellow; they differ in crystal form and soly. With $AgNO_3$, II forms the sparingly sol. light-yellow $KAg[Pt(NO_2)_3Cl_3]$; in contrast the Ag salt of I is readily sol., and action of $AgNO_3$ on I gives a ppt. of AgCl. Action of a soln. of $[Pt(NH_3)_4]Cl_2$ on I produces a ppt. of light-yellow needles of $[Pt(NO_2)_4][Pt(NO_2)_3Cl]$, i.e. there is exchange in the cation with simultaneous reduction of Pt^{IV} to Pt^{II}, with a loss of a Cl-Cl pair. With II, the product is bright-orange prisms of $[Pt(NH_3)_4][Pt(NO_2)_3Cl_3]$, i.e. there is reduction with loss of a NO_2-Cl pair. Cautious heating of II with dil. HCl produces no change, whereas with I it results in the exchange of one NO_2 group for Cl, and production of $K_2[Pt(NO_2)_2Cl_4]$. N. Thon

BABAYEVA, A.V.; USHAKOVA, N.I.

Isomerism of acidocomplex platinum compounds. Izv.Sekt.plat.i blag.met. no.27:164-174 '52. (MLRA 7:5)
(Isomerism) (Compounds, Complex) (Platinum)

BABAYEVA, A. V., PROF.

USSR/Physics - Scientists Jun 52

"Outstanding Discovery," Prof A. V. Babayeva, Inst of Gen and Inorg Chem imeni N. S. Kurnakov, Acad Sci USSR

"Priroda" Vol 41, No 6, pp 65, 66

Author states that I. I. Chernyayev, student of L. A. Chugayev, has established dependence of reacting properties of a displaced atom on the character of its "partner," i.e., atom or mol on the diagonal end of the atomic or mol lattice. This relation has figured in the concepts of A. M. Butlerov and V. V. Markovnikov and entered

229T110

chemistry as Chernyayev's law. Chernyayev applied his theories to platinum production. He was awarded a Stalin First Prize for 1952.

229T110

BABAYEVA, A.V.

Reactions in solutions of diammines of bivalent platinum under the influence of ultraviolet radiation. A. V. Babaeva and M. A. Mosyagina. [illegible] S.S.S.R. [illegible] (Chem. Sci.) 1953, 205 (Engl. translation). (See C.A. 48, [illegible]) H. L. H.

BABAYEVA, A.V.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Electronic Phenomena and Spectra

Reactions in solutions of diammines of bivalent platinum under the influence of ultraviolet radiation. A. V. Babaeva and M. A. Mosyagina. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1953, 227-31; cf. *C.A.* 38, 6196[4].—A satd. soln. of *cis*-$(NH_3)_2Cl_2Pt$ was exposed in a quartz vessel to the unfiltered light of a Hg-quartz lamp. A black ppt. was obtained whose compn. indicated a polynuclear complex in which neutral (NH)Pt(OH)Cl groups were coordinatively bonded to $Pt(OH)_4^{--}$. The wave length range of effective radiation was that of the absorption band with a max. at 2750 A. J. W. Loweberg, Jr.

BABAYEVA, A.V.

Il'ia Il'ich Cherniaev, an outstanding Soviet scientist; on his 60th birthday. Zhur.ob.khim. 23 no.5:713-717 My '53. (MLRA 6:5)

1. Ivanovskiy khimiko-tekhnologicheskiy institut. (Cherniaev, Il'ia Il'ich) (Compounds, Complex)

BABAYEVA, A.V.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Organic Chemistry

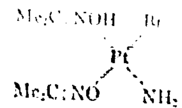
1/2

[illegible] compounds of platinum with acetoxime. A. V. Babaeva, M. A. Mosyagina, and [illegible] *Doklady Akad. Nauk S.S.S.R.* 80, 467 [illegible] forms definite [illegible]

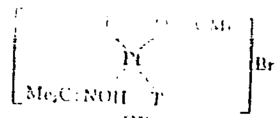
[illegible] amts. of K_2PtBr_4 and I yields yellow prisms of *cis*-$2I.PtBr_2$ (II), with n_g 1.702, n_p 1.626, extinction [illegible] 13°, sol. [illegible] NH_4OH; it is a nonelectrolyte [illegible] explodes. The cis structure was proved by the thiourea reaction of N. S. Kurnakov. Often the [illegible] a mixt. of cis and trans isomers, sepd. by [illegible] the formation of the trans form [illegible] soln. of the cis dibromide in H_2O leading [illegible] IIa, which on heating changes to [illegible] platinum with elimination of I. IIa forms yellow prisms and is readily produced from molten I and II [illegible] a soln. of II in NH_4OH yields a yellow sparingly sol. IIIa. *trans*-II, formed by heating [illegible] with I as described above, forms yellow plates sparingly sol. in H_2O, readily sol. in Me_2CO and aq. Me_2CO and in [illegible] solns, n_g 1.710, n_p 1.607. *trans*-II [illegible] if this reaction is [illegible] $2I.PtBr_2$ I with [illegible]

Baboova, A. V. (2)

medium gave 20% [illegible] oxide. An almost [illegible] $K_2[(Me_2CNOH)PtCl_3]$ at [illegible] of Br analogs.



(IIIa)



(IIIb)

n_α 1.659, n_γ 1.693. The same product is obtained fairly pure from I and $K_2[Pt$ ... (Me_2CO) ... structure is shown by reaction with $(CH_2NH_2)_2$ in Me_2CO which forms $EPt(NO_2)_2$ $[E = (CH_2NH_2)_2]$. The isomeric trans deriv. is obtained by exchange between 2I ... and $NaNO_2$ in H_2O in 2 hrs. at room temp. followed by heating at 50°: trans-$2I.Pt(NO_2)_2$ (IV), colorless, n_α 1.6... n_γ 1.6..., sparingly sol. in H_2O and Me_2CO, its aq. soln. has pH 5.6. With $(CH_2NH_2)_2$ it shows the trans structure, yielding ... $(Pt$ ... after treatment with K_2PtCl_4. IV ... in alkali yielding 2 protons from the ... trod. ... $[(Me_2CNO)Pt(NO_2)_2]K$ ... The product was isolated as $[(Me_2CNO)_2(NO_2)_2Pt][Pt(NH_3)_4]$. G. M. K.

BABAYEVA, A.V.; LYUBOSHITS, I.I.

Complex compounds of bivalent palladium with acetoxime. Doklady Akad. Nauk S.S.S.R. 89, 681-4 '53. (MLRA 6:3)
(CA 47 no.19:9843 '53)

[illegible], [illegible]; [illegible], [illegible] A.

Platinum Organic Compounds

Complex compounds of bivalent platinum with [illegible]. Dokl. AN SSSR [illegible], No. 2, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102820003-5"

BABAYEVA, A. V.

USSR/Physics - Spectral analysis

Card 1/1 Pub. 43 - 52/62

Authors : Babayeva, A. V., and Rudyy, R. I.

Title : Absorption spectra of complex compounds in crystals

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 729-730, Nov-Dec 1954

Abstract : The absorption spectra of crystalline powders of aminates, amino-acido and acido-compounds of various metals, preferably of the Pt group, were investigated in the visible and ultraviolet zones at room temperature. A comparison of spectra of these compounds in crystals and in solutions showed that the amine compounds, having pure covalent bonds between the central atom and the substitute, had identical absorption band maxima in both cases. The spectra of crystals of isometic amino-acido-compounds were found to be different from the spectra of these compounds in solutions. Four references: 2 USA and 2 USSR (1926-1943). Tables.

Institution : Acad. of Sc., USSR, The N. S. Kurnakov Inst. of Gen. and Inorg. Chem.

Submitted : ....

БАБАЕВА, А.В.

GRINBERG, A.A. (Leningrad); BABAYEVA, A.V.(Moscow); YATSIMIRSKIY, K.B. (Ivanovo); GOREMYKIN, V.I. (Moscow); BOLIY, G.B. (Moscow); FIALKOV, Ya.A. (Kiyev); YAKSHIN, M.M. (Moscow); KEDROV, B.M. (Moscow); GEL'MAN, A.D. (Moscow); FEDOROV, I.A. (Moscow); MAKSIMYUK, Ye.A. (Leningrad); VOL'KENSHTEYN, M.V. (Leningrad); ZHDANOV, G.S. (Moscow); PTITSYN, B.V. (Leningrad); ABLOV, A.V. (Kishinev); VOLSHTEYN, L.M. (Dnepropetrovsk); TROITSKAYA, A.D. (Kazan'); KLOCHKO, M.A. (Moscow); BABAYEVA, A.V.; TRONEV, V.G. (Moscow); RUBINSHTEYN, A.M.(Moscow) CHERNYAYEV, I.I.; GRINBERG, A.A.; TANANAYEV, I.V.

Explanation of the transeffect. Izv.Sekt.plat.i blag.met. no.28: 56-126 '54. (MLRA 7:9)

(Compounds, Complex) (Platinum)

BABAYEVA, A.V.

Complex compounds of bivalent platinum with acetoxime. A. V. Babaeva and M. A. Mosyagina. *Izvest. Sektora Platiny i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* No. 28, 202-12(1954); cf. *C.A.* 47, 10392*b*.—*cis*-[PtA_2Cl_2] (I) (*A* = acetoxime) with an excess of NH_4OH gives a white cryst. ppt. of [$PtANH_3Me_2CNOCl$] (II). Treating II with HCl gives [PtA_2NH_3Cl]Cl, which upon reaction with K_2PtCl_4 in a H_2O-Me_2CO soln. gives yellow prisms of [PtA_2NH_3Cl]$_2$[$PtCl_4$]. Mixing warm solns. of I and excess *A* gives white prisms of [PtA_3Cl]Cl (III). [PtA_4]Cl_2 is not obtained even on fusing *A* with III. The Cl in II is not replaced upon extended heating with NH_4OH, but adding 2.5 g. *cis*-[$Pt(NH_3)_2Cl_2$] (IV) in small portions to a hot soln. of 2.5 g. *A* in 20 ml. H_2O gives a colorless soln., which is evapd. until sirupy, cooled, treated with Me_2CO, stirred, and filtered to yield colorless plates of *cis*-[$PtA_2(NH_3)_2$]Cl_2 (V), which on reaction with K_2PtCl_4 forms rose needles of [$PtA_2(NH_3)_2$][$PtCl_4$]. Although trans diammines are usually obtained by the action of acids on tetrammines, treating V with concd. HCl gave IV, thus indicating that the Pt-*A* bond is less stable than the Pt-NH_3 bond. Heating a Me_2CO soln. of I with pyridine gives, after removal of the Me_2CO, a paste. By triturating the paste with an EtOH-Me_2CO mixt., light-yellow crystals, apparently [$PtApyMe_2CNOCl$], sep. These on treatment with HCl give [$PtApyCl_2$]. Heating III with concd. HCl gives yellow prisms of *trans*-[PtA_2Cl_2] (VI) (n_γ = 1.678, n_α = 1.598); the trans configuration was confirmed by reaction with $CS(NH_2)_2$ to give [$Pt\,th_2AMe_2CNO$]Cl, which on acidification would form [$Pt\,th_2A_2$]$^{++}$. Evapg. a soln. obtained by heating *trans*-[$Pt(NH_3)_2Cl_2$] (VII) with *A* gives a colorless cryst. ppt. of *trans*-[$PtA_2(NH_3)_2$]Cl_2 (VIII), which with K_2PtCl_4 gives brick-red [$PtA_2(NH_3)_2$][$PtCl_4$]. Treating VIII with HCl gives VII.

Heating *trans*-[Pt($NH_2OH)_2Cl_4$] with *A*, and evapg. the solns. gives colorless *trans*-[$PtA_2(NH_2OH)_2$]Cl_2 (IX). The fact that IX on treatment with HCl gave a mixt. of VI and *trans*-[Pt($NH_2OH)_2Cl_4$] indicates that the Pt-*A* and Pt-NH_2OH bonds are of similar stability. Heating stoichiometric amts. of K_2[$PtBr_4$] and *A* in H_2O soln. gives yellow prisms of *cis*-[PtA_2Br_2] (X) (decomp. 160-3°; n_γ = 1.702, n_α = 1.626; angle of extinction 45°). Fusing X with *A* gives pale-yellow prisms of [PtA_3Br]Br. Evapg. the solvent from soln. obtained by dissolving X in NH_4OH gives light-yellow crystals corresponding in compn. to [$PtNH_3A$-Me-CNOBr] (XI). Heating X in H_2O with excess *A* gives yellow platelets of *trans*-[PtA_2Br_2] (XII) (n_γ = 1.710, n_α = 1.607), readily sol. in alk. solns. Adding 1.5 g. *A* to a hot soln. of 3.7 g. *cis*-K_2[Pt($NO_2)_2C_2O_4$] gives on cooling colorless crystals of *cis*-[$PtA_2(NO_2)_2$] (XIII) (n_γ = 1.655, n_α = 1.603). Triturating 1.3 g. VI, 0.5 g. $NaNO_2$, and 20 ml. H_2O for 30 min., after 2 hrs. adding 0.2 g. more $NaNO_2$, dilg. with H_2O, and heating to 70°, gives a colorless ppt. of *trans*-[$PtA_2(NO_2)_2$] (XIV) (n_γ = 1.690, n_α = 1.603), which is sol. in KOH but reppt. by HCl. In alkali XIV gives K_2[Pt-($Me_2CNO)_2(NO_2)_2$], which can be isolated as [$Pt(NH_3)_4$]-[$Pt(Me_2CNO)_2(NO_2)_2$]·H_2O. I, VI, X, and XIII are sol. in H_2O and Me_2CO; II and XII are sol. in Me_2CO but slightly sol. in H_2O; V and XIII are sol. in H_2O but slightly sol. in Me_2CO; XI and XIV are slightly sol. in Me_2CO and H_2O.

Donald B. Miller

BABAYEVA, A.V.

Molecular weights of acetoxime compounds of platinum and palladium. A. V. Babaeva and I. V. Gorshkova (M. V. Lomonosov State Univ., Moscow). *Izvest. Sektora Platiny i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* No. 29, 45-54(1955).—Mol. wts. of the following compds. were detd. in the Beckmann mol.-wt. app. with PhOH being used as the solvent (cryoscopic consts. (K) of PhOH as solvent were 6.90 with BzOH as solute and 7.30 with naphthalene as solute): (compd., av. mol. wts. detd. by using $K = 6.90$ and $K = 7.30$, resp.) *cis*-dichlorodiacetoximeplatinate (I), 402.4, 425.6; *trans*-dichlorodiacetoximeplatinate (II), 400.8, 424.1; *cis*-dibromodiacetoximeplatinate, 478.6, 505.3; chlorotriacetoximeplatinum chloride (III), 350.6, 381.4; palladium dichlorodiacetoxime (IV), 260.6, 285.2. These measurements establish the monomeric nature of the isomers I and II. It was noted that the acidic medium of phenol effects the change of III into II and brings about partial decompn. of IV. When camphor was used as cryoscopic liquid, the mol. wt. of II was 408.0. 10 references. A. P. K.

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Inst. Gen. + Inorganic Chem. im. Kurnakov, AS USSR and Chemistry Faculty, Moscow State U.

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. BABAYEVA, A. V.

USSR/Inorganic Chemistry. Complex Compounds C

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 18857

Author : A.V. Babayeva, M.A. Karepina

Inst : -

Title : Concerning Complex Compounds of Bivalent Platinum with Acetoxime.

Orig Pub : Izv. Sektora Platiny IONKh AN SSSR 1955, No 31, 56-65.

Abstract : The interaction of trans- and cis-[$PtAox_2Cl_2$] (I), where Aox is acetoxime (Report I, RZhKhim 1955, 1[illegible]) with NH_3 and C_5H_5N was studied and some physico-chemical constants of Pt (2+) complexes with Aox were determined. At the action of the concentrated solution of NH_3 on cis-I the salt dissolves, and after the superfluous NH_3 has been removed, white acicular crystals insoluble in H_2O but soluble in diluted acids separate. In accordance with analyses, the following formula was attributed to this compound: [$Pt Aox(CH_3)_2CNONH_3H_2O$]·[$Pt \{(CH_3)_2CNO\}_2H_2OCl$] (II).

Card 1/2 -30-

USSR/Inorganic Chemistry. Complex Compounds. C

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 18857

Light-yellow crystals of /$\overline{P}$tAox$_2$H$_2$OCl/Cl.H$_2$O (III) in the shape of flat rhombs separate from the filtrate after the separation of II and acidification with Hcl. Under the action of HCl (1:1) III forms cis-I. The following mechanism of the reaction of I with NH$_3$ is proposed: H detaches from Aox belonging to the internal sphere of I, when the ions OH$^-$ are in abundance, and a soluble NH$_4$ salts is produced which transforms later into /$\overline{P}$tAox (CH$_3$)$_2$CNOClH$_2$O/ (IV), where Cl is situated in trans-position to Aox. If the excess of NH$_3$ is great, H will separate from the second molecule of Aox in IV and will form NH$_4$/$\overline{P}$t ((CH$_3$)$_2$CNO)$_2$NH$_3$H$_2$O/ (V); besides, also /$\overline{P}$tAox (CH$_3$)$_2$ CNONH$_3$H$_2$O/Cl (VI) can be formed; anion and cation remaining in the solution produce II, but a considerable amount of V remains in the solution. Cis-I dissolves easily in a 0.3 - 0.5% solution of NH$_3$ when heated. Light yellow prisms of IV, well soluble in a

Card 1/3

USSR/Inorganic Chemistry. Complex Compounds. C

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 18857

mixture of H_2O and $(CH_3)_2CO$, separate from the solution after 24 hours. When 0.3 - 1% HCl acts on IV, III is produced; when concentrated (or 1:1) HCl acts, cis-I is produced. Trans-I dissolves well in a concentrated solution of NH_3, from which $[PtAox(CH_3)_2CNOClNH_3]\cdot 3H_2O$ (VII) separates after the removal of the excessive NH_3. VII dissolves in diluted HCl producing a white precipitate of large prisms of $[PtAox_2NH_3Cl]\cdot 3H_2O$. When heated with concentrated HCl, VI and VII detach NH_3 in accordance with Jorgensen's rule. Trans-I interacts with C_5H_5N in an acetone solution producing $[PtAox_2C_5H_5NCl]Cl$. The results of determination of isomers of I and $[PtAox_2Br_2]$ confirmed the geometrical configurations of these substances. At the action of excessive Aox on $K_2[Pt(NO_2)_4]$, white insoluble in water crystals of $[PtAox_2(CH_3)_2CNONO_2]\cdot H_2O$ are produced; these crystals start to disintegrate at 50 - 60°. Colorless prisms of $[PtAox_3NO_2]Cl$

Card 2/3

USSR/Inorganic Chemistry. Complex Compounds C

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 18857

separate from the solution of VIII in HCl. At an interaction between cis-$K_2[Pt(NO_2)_2Cl_2]$ (IX) and Aox in various relations, trans-$[PtAox_2(NO_2)_2]$ (X) are always produced, which the authors explain by the isomerization of cis-IX into trans-IX and by the lesser solubility of trans-X. Trans-X also is produced by the action of $NaNO_2$ on cis-I (Yield 14%). Solubility, the values of pH and dissociation degrees of acetoxime compounds of Pt(2-) were determined, and a series of deductions regarding their acid-alkaline properties was made.

Card 3/3

BABAYEVA, A.V.; BUKOLOV, I.Ye.

Nickel complex compounds with hydroxylamine. Izv.Sekt.plat.i blag.met. no.31:67-70 '55. (MLRA 9:5)
(Nickel compounds) (Compounds complex)

USSR/Physical Chemistry - Molecules. Chemical Bonds. B-4

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14392

Abstract: in solution. The spectra of solutions and crystals of ammoniates with donor-acceptor bonds are identical and the maxima of the absorption bands are almost not shifted; $[Ni(NH_3)_6]^{2+}$ which has a bond of an ionic-dipolar character and is unstable in solution, is an exception. In spectra of aminoacidic compounds CO, Pt and Pd, the position of maximum bands undergoes in solution of the complex a shift which is not identical for various bands of the same compound. For acidocomplexes, the spectrum of polycrystals is shifted into the long wave region, but the magnitude of the shift depends on the nature of the addenda; it is assumed that this is caused by the action of the crystallic lattices fields. In the spectra of crystals of isomer aminoacidic complexes ($[CO(NH_3)_4Cl_2]Cl$, $[CO(En)_2Cl_2]Cl$, $[Pt(NH_3)_2Cl_4]$, $[Pt(NO_2NH_3)_2Br_2]$, $[Pt(NH_3)_2Cl_2]$, $[Pt(NH_3)_2(NO_2)_2]$, $[Pt\{(CH_3)_2CNOH\}_2Cl_2]$, $[Pt\{(CH_3)_2\}CNOH)_2Br_2]$), the

Card 2/3

USSR/Physical Chemistry - Molecules. Chemical Bonds. B-4

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14392

Abstract: absorption limits from the region of long waves and the absorption maxima of trans-isomers lie in the region of lower frequencies than for cis-isomers which is explained by a greater bond strength in trans-complexes. The conversion of this order in solution is explained by the trans-influence effect in solutions, which loosens the bond between the central atom and the substitute.

N. S. Kurnakov Inst. Gen and Inorganic Chemistry, Acad Sci USSR.

Card 3/3

BABAYEVA, A. V.

78-3-9/35

AUTHORS: Babayeva, A. V. and Rudyy, R. I.

TITLE: Absorption Spectra of Complex-Compound Polycrystals at Low Temperatures. (Spektry Pogloshcheniya Polikristallov Kompleksnykh Soyedineniy pri Nizkikh Temperaturakh).

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1957, Vol.II, Nr.3, pp. 552-554. (USSR)

ABSTRACT: Little work has previously been done on the absorption spectra of complex compounds in the crystalline state. Great interest attaches to the investigation of such spectra at low temperatures, when thermal fluctuations are eliminated and the band structure is especially clear. The authors have carried out such investigations for the following compounds: $K_2[PtCl_6]$, $K_2[PtCl_4]$, $K_2[PtBr_6]$, $K_2[PtBr_4]$, $K_2[Pt(NO_2)_4]$, $K_2[Pt(CN)_4]\cdot 3H_2O$, $[(NH_3)_4Pt]Cl_2$, the isomeric dichlorodiamines of divalent platinum $[Pt(NH_3)_2Cl_2]$ and $(NH_4)_2[PdCl_4]$. The data obtained show that the absorption bands on lowering the

Card 1/2

AUTHORS: Babayeva, A.V., Ushakova, N.I. SOV/78-3-7-11/44

TITLE: The Isomerism of Acidocomplex Compounds of Quadrivalent Platinum (Izomeriya atsidokompleksnykh soyedineniy chetyrekhvalentnoy platiny). III. The Isomerism of Potassium Dinitrotetrachloroplatinate (III. Izomernyye dinitrotetrakhloroplateaty kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 7, pp 1529-1533 (USSR)

ABSTRACT: Trans-potassium dinitrotetraphloroplatinate is produced by the oxidation of trans-dinitrodihydroxylamineplatinate by chlorine. Oxidation is brought about at low temperatures by means of gaseous chlorine and with a yield of 25-30%. Crystallooptical analyses of isomers of potassium dinitrotetrachloroplatinate show that the two compounds have different refraction indices. The density of the isomeric dinitrototetrachloroplatinate compounds was determined pycnometrically. For the cis-isomers a value of 3.312, and for the trans-isomers one of 3.232 was determined. The solubility of these compounds in water at 25° C shows that the solubility of cis-dinitritotetrachloroplatinate is 1.3 times greater than that of the corresponding trans-isomers. It was found

Card 1/2

The Isomerism of Acidocomplex Compounds of Quadrivalent Platinum. III. The Isomerism of Potassium Dinitritotetrachloroplatinate SOV/ 78-3-7-11/44

by spectrophotometric investigation at UV-light that the maximum of absorption of the trans-isomers is about λ = 2800 Å and that of cis-isomers about λ = 2850 Å. There are 3 figures, 1 table, and 6 Soviet references.

SUBMITTED: June 26, 1957

1. Complex compounds--Isomerism 2. Complex compounds--Properties 3. Platinum--Properties 4. Potassium--Properties 5. Chlorine --Chemical reactions 6. Spectrophotometers--Applications

Card 2/2

AUTHORS: Babayeva, A.V., Ushakova, N.I. SOV/78-3-7-12/44

TITLE: The Isomerism of Acid-Complex Compounds With Quadrivalent Platinum (Izomeriya atsidokompleksnykh soyedineniy chetyrekhvalentnov platinv) IV. The Isomerism of Potassium Dinitrodibromodichloroplatinate (IV. Izomernyye dinitrodibromdikhloroplateaty kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 7, pp 1534-1539 (USSR)

ABSTRACT: Dinitrodibromodichloroplatinate potassium was produced by the oxidation of trans-dinitrodibromoplatinate potassium $[(NO_2)_2Br_2Pt]K_2$ with chlorine. The product obtained has the following composition: Pt - 32.74%, Cl + Br - 38.70%, N - 4.69%. The refraction index of the compounds obtained by oxidation is:
$[(NO_2Cl)_2Br_2Pt]K_2$ Ng = 1.889, N_m = 1.830, N_p = 1.771
$[(NO_2)_2Br_2Cl_2 Pt]K_2$ Ng = 1.908, N_m = 1.810, N_p = 1.778
The density for $[(NO_2Cl)_2Br_2 Pt]K_2$ amounts to 3.683 and for $[(NO_2)_2Br_2Cl_2 Pt]K_2$ to 3.648. The above two compounds have different degrees of solubility in water at 25°C; in the case of the

Card 1/3

The Isomerism of Acid-Complex Compounds With Quadrivalent Platinum. IV. The Isomerism of Potassium Dinitritodibromodichloroplatinate SOV/78-3-7-12/44

former it is 5.30%, and of the latter 4.32%. The determinations carried out of the physical-chemical properties of molar refraction, of the dielectric constant, of electric conductivity, and of atomic polarization confirm the heterogeneous structure of these compounds. By the action of quinoline muriatic the following compounds are formed: $(C_9H_7NH)_2[(NO_2.Cl)_2Br_2Pt]$ with a solubility of 0.144% and $(C_9H_7NH)_2[(NO_2)_2Cl_2Br_2Pt]$ with a solubility of 0.107%. In connection with the action of two molecules of sodium nitrite upon the two compounds $[(NO_2Cl)_2Br_2\,Pt]K_2$ and $[(NO_2)_2Br_2Cl_2\,Pt]K_2$ it was found that chlorine cannot be exchanged by the nitro group. By chemical reaction the difference in structure of the dinitrodibromodichloroplatinate potassium compounds was not confirmed. Only by means of X-ray analysis and by the Debyegrams obtained was it possible to show that the two compounds differ from each other. The physical-chemical properties of these isomers are given by tables. There are 4 figures, 2 tables, and 4 references, 3 of which are Soviet.

Card 2/3

The Isomerism of Acid-Complex Compounds With Quadrivalent Platinum. IV. The Isomerism of Potassium Dinitrodibromodichloroplatinate SOV/78-3-7-12/44

SUBMITTED: June 26, 1957

1. Complex compounds--Isomerism 2. Complex compounds--Physical properties 3. Complex compounds--Chemical properties 4. Complex compounds--Oxidation 5. Platinum--Properties 6. Potassium --Properties 7. Chlorine--Chemical reactions 8. X-ray analysis --Applications

Card 3/3

BABAYEVA, A.V.; VOLKOVA, G.Ya.; GRIGOR'YEVA, N.G.

Substitution reactions in the bipyridine complexes of divalent nickel and cobalt. Zhur.neorg.khim. 4 no.2:330-336 F '58.
(MIRA 12:3)

(Bipyridine) (Nickel compounds) (Cobalt compounds)

AUTHORS: Babayeva, A. V., Yevstaf'yeva, O. N. 75-13-3-8/27

TITLE: The Spectroscopic Determination of Calcium, Magnesium, Aluminum, Silicon and Tin in Refined Rhodium and Iridium (Spektral'noye opredeleniye kal'tsiya, magniya, alyuminiya, kremniya i olova v affinirovannykh rodii i iridii)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp 304-307 (USSR)

ABSTRACT: For the analysis of refined rhodium and iridium on calcium, magnesium, aluminum, silicon and tin the metal is brought to solution. This solution is evaporated in an alternating-current spark arc. The success of the analysis mainly depends on the presence of good standard solutions. The authors of the present paper used purest trichlorotriaminorhodium as initial product for the standard rhodium solutions. But this preparation always contains some calcium which cannot even be removed by repeated careful recrystallization. These small amounts of Ca were taken into account on the basis of an extrapolation. Trichlorotriaminorhodium was decomposed in the heat and reduced in the hydrogen current. The thus obtained metallic rhodium was brought to a soluble form by treatment with chlorine at 800-900^{0} (referende

Card 1/3

The Spectroscopic Determination of Calcium, Magnesium, Aluminum, Silicon and Tin in Refined Rhodium and Iridium

75-13-3-8/27

1). The photographing of the spectra was performed in a spark spectrograph with carbon electrodes excited by alternating current the technical data of which are given in detail. The spectra were photographed on photographic plates of the type NIKFI /II, which were developed in a metol-hydroquinone developer. The photometric determinations were made on a Zeiss microphotometer. In the determination of calcium the content of calcium in pure rhodium was first determined by graphic extrapolation. These values were taken into account in the use of calibration solutions. The mean arithmetic error in the determination of calcium for concentrations of 0,065 - 0,005% amounts to 9-11%. Due to the calcium content in the standard rhodium value, concentrations lower than 0,005% cannot be determined. In the determination of aluminum the error is up to 20%. The sensitivity of the determination of tin is very low at a tin content of < 0.0001%, the lines are not intensively marked. More strongly concentrated solutions must therefore be used as calibration solutions. In the determination of these elements in iridium the absence of a spectrally pure iridium preparation represents the main difficulty. As in the case of rhodium the metal was brought to so-

Card 2/3

lution by chlorination. The content of calcium could not be reduced by recrystallization. Calcium was for the major part removed by thrice co-precipitating it on lanthanum oxalate. The remainder of calcium was determined by extrapolation and taken into account. The mean error in the determination of calcium is 7-9%, in the case of magnesium 6%, aluminum - 12-14%, silicon - ~20% and tin - 10%. The sensitivity of the determination of tin in the presence of iridium is low; the smallest determinable amount is only 0,4% of the amount of iridium. The used analytical lines of all elements to be determined and the corresponding lines of rhodium and iridium as well as the calibration curves for the elements to be determined are given. There are 4 figures and 1 reference, which is Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN SSSR, Moskva (Moscow, Institute of General and Inorganic Chemistry imeni N.S. Kurnakov, AS USSR)

SUBMITTED: June 26, 1957

Card 3/3

1. Iridium--Spectrographic analysis 2. Rhodium--Spectrographic analysis

SOV/75-13-5-13/24

AUTHORS: Borovik, S. A. (Deceased), Babayeva, A. V., Ushakova, N. I., Rudyy, R. I.

TITLE: Determination of Calcium, Magnesium, Aluminum, Silicon and Tin in Affined Platinum and Palladium (Opredeleniye kal'tsiya, magniya, alyuminiya, kremniya i olova v affinirovannykh platine i palladii)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 5, pp 580-582 (USSR)

ABSTRACT: The spectrometric determination of small quantities of calcium, magnesium, aluminum, silicon and tin in affined platinum and palladium is most suitably carried out in solutions, since the preparation of calibration substances in form of alloys is very difficult and the use of powdery standards does not guarantee the required precision. For the determination in solutions the authors used the method according to S. A. Borovik (deceased) and T. F. Borovik-Romanova (Ref 1). The reference solutions were made from high purity preparations of $CaSO_4$, $Mg(NH_4)_2(SO_4)_2 \cdot 6H_2O$, $Al(NO_3)_3 \cdot 9H_2O$ and $SnCl_2 \cdot 2H_2O$ the chemical purity

Card 1/4

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SOV/75-13-5-13/24

Determination of Calcium, Magnesium, Aluminum, Silicon and Tin in Affined Platinum and Palladium

of which was determined by spectral analysis. The calibration solutions contained the above mentioned metals in quantities of 3.10^{-6}% up to 1.10^{-2}%. In this concentration range the straying of the points was negligible. The silicon reference solution was formed by dissolving sodium silicate in water (the sodium silicate was formed by decomposition of purest SiO_2 by means of sodium carbonate). For the excitation of the spectra an a. c. - arc was used; the spectra were recorded in a Khil'ger spectrograph on photographic plates of the type NIIFI (type 2). For the establishment of the calibration curves the following pairs of lineswere used: Ca II (3933,67 Å) - Pt I (3966,36 Å); Mg II (2802,7 Å) - Pt I (2803,24 Å); Al I (3961,52 Å) - Pt I (3966,36 Å); Si I (2881,58 Å) - Pt I (2893,87 Å); Sn I (3034,12 Å) - Pt I (3036,43 Å). The used platinum solution was a 1% one and was obtained from the Blomstrand salt $(NH_3NO_2)_2Cl_2Pt$. This preparation contained traces of calcium which could not be removed. They were considered in the results for the determination by extrapolation. The obtained calibration curves make possible

Card 2/4

SOV/75-13-5-13/24

Determination of Calcium, Magnesium, Aluminum, Silicon and Tin in Affined Platinum and Palladium

the determination of amounts up to 0,002% Ca, 0,02% Mg, Al and Si and 0,06% Sn. The mean error is ± 6% for the determination of Ca, Mg and Al, and ± 9% for Si and Sn. For the analogous determination of the above elements in affined palladium reference solutions of this metal with a content of 0,5% - 1% Pd were produced. The preparation of these solutions is precisely described in the paper. The solutions contained traces of calcium and magnesium which could not be removed and were considered by extrapolation. In the reference solutions of the admixtures the content of Ca, Mg, Al and Sn was varied between 0,2% and 0,006% and the content of Si between 0,1% and 0,0003% in relation to palladium. The used analytical pairs of lines were: Ca II (3933,67 Å) - Pd I (3958,64 Å), Pd I (3922,96 Å); Mg I (2852,13 Å) - Pd II (2854,58 Å); Al I (3961,52 Å) - Pd I (3958,64 Å); Sn I (3034,12 Å) - Pd II (3032,08 Å); Si I (2881,58 Å) - medium. The sensitivity of the determination of the mentioned admixtures in platinum salt- and palladium salt solutions attains for Ca $1 \cdot 10^{-5}$%, for Mg

Card 3/4

SOV/75-13-5-13/24

Determination of Calcium, Magnesium, Aluminum, Silicon and Tin in Affined Platinum and Palladium

$3 \cdot 10^{-5}$%, for Al and Si $1 \cdot 10^{-4}$%, and for Sn $3 \cdot 10^{-4}$%. There are 3 figures and 2 references, 2 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN SSSR, Moskva (Institute of General and Inorganic Chemistry, AS, USSR, Moscow)

SUBMITTED: June 21, 1957

Card 4/4

SOV/78-4-2-14/40

5(4)

AUTHORS: Babayeva, A. V., Volkova, G. Ya., Grigor'yeva, N. G.

TITLE: Substitution Reactions in Dipyridine Complex Compounds of Bivalent Nickel and Cobalt (O reaktsiyakh zameshcheniya v dipiridinovykh kompleksnykh soyedineniyakh dvukhvalentnykh nikelya i kobal'ta)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 2, pp 330-336 (USSR)

ABSTRACT: The substitution reactions in dipyridine complex compounds of bivalent nickel and cobalt were investigated in order to find out the influence of the individual addenda on the complex. $NiPy_2Cl_2$ and $CoPy_2Cl_2$ were used as initial compounds. The latter compound exists in two modifications: α-violet and β-blue. It was found that in alcoholic solutions of $NiPy_2Cl_2$ and $CoPy_2Cl_2$ the chlorine ion may be exchanged by The fol-
bromine, nitrito, thiocyanogen, and oxalate groups.
lowing compounds were produced: $NiPy_2(NO_2)_2 \cdot 2H_2O$ in the form of prisms, refractive index $N_1 = 1.682$ and $N_2 = 1.530$. The

Card 1/3

compound is soluble in water and acetone, and insoluble in chloroform. The solubility in methyl alcohol is 9.52% at 25°; $NiPy_2(NCS)_2$ crystallizes in the form of fine blue crystals which show a solubility of 1.6% in methyl alcohol; for the first time $NiPy_2C_2O_4$ was separated (blue crystals). $CoPy_2(NO_2)_2$ crystallizes in the form of yellow-pink crystals; $CoPy_2(NCS)_2$ crystallizes in the form of violet prisms. On joint crystallization in alcoholic solutions of $NiPy_2Cl_2$ and $NiPy_2(NO_2)_2.2H_2O$, and $NiPy_2Br_2$ and $NiPy_2(NO_2)_2.2H_2O$, respectively, the following isomorphic compounds were produced: $NiPy_2NO_2Cl.2H_2O$ and $NiPy_2NO_2Br.2H_2O$, respectively. Cobalt did not show similar compounds. The X-ray analyses of these compounds showed that new isomorphic compounds have been found. The electric conductivity in the nickel dipyridine compounds was determined and magnetic investigations were carried out; (the latter by V. I. Belova). The

SOV/78-4-2-14/40

Substitution Reactions in Dipyridine Complex Compounds of Bivalent Nickel and Cobalt

properties of the dipyridine nickel compounds are shown in detail in table 2. The stability in alcoholic solutions has the following order:
$NiPy_2(CNS)_2 \gg NiPy_2(NO_2)_2 \gg NiPy_2NO_2Cl > NiPy_2NO_2Br > NiPy_2Cl_2 >$ $NiPy_2Br_2$. There are 2 tables and 12 references, 4 of which are Soviet.

SUBMITTED: December 22, 1957

Card 3/3

5(4)

AUTHORS: Babayeva, A. V., Baranovskiy, I. B. SOV/78-4-4-8/44

TITLE: The Oxidation of Pyridine-containing Complex Compounds of Divalent Cobalt (Okisleniye piridinsoderzhashchikh kompleksnykh soyedineniy dvukhvalentnogo kobal'ta)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 755-760 (USSR)

ABSTRACT: The oxidation processes of $CoPy_2Cl_2$, $CoPy_2Br_2$, $CoPy_2(NO_2)_2$, $CoPy_4Br_2$, and $CoPy_4Cl_2$ with chlorine and bromine were investigated in alcoholic solution. It was found that the compounds $CoPy_2Cl_2$ and $CoPy_2(NO_2)_2$ are transformed to the compound $(PyH)_2[CoCl_4]$ by the effect of chlorine. When insufficient amounts of chlorine are introduced into the solutions of $CoPy_4Cl_2$ the compound $Co_2Py_5Cl_5$ is produced in the form of blue-green, needle-shaped crystals with the refractive indices Ng = 1.698 and Np = 1.680. The crystals are difficultly soluble in water, but dissolve easily in absolute methyl alcohol. The oxidation of $CoPy_4Cl_2$ leads to the formation of

Card 1/3

The Oxidation of Pyridine-containing Complex Compounds of Divalent Cobalt

SOV/78-4-4-8/44

$[CoPy_4Cl_2]Cl$. This compound crystallizes with 6 molecules of water. The compound is anhydrous after recrystallization from absolute alcohol. The oxidation of $CoPy_2Br_2$, $CoPy_2Cl_2$, and $CoPy_4Br_2$ with bromine produces the polybromides $[CoPy_4Br_2]Br.Br_2$ and $[CoPy_4Cl_2]Br.Br_2$. Treatment of $[CoPy_4Br_2]Br.Br_2$ with potassium iodide solution transforms this compound into the polyiodide $[CoPy_4J_2]J.J_2$, a black powder which turns brown and then green when exposed to the air. By reduction of the polybromides and of $[CoPy_4Cl_2]Cl$ the following monoamines were produced: $PyH[CoPyBr_3]$, $PyH[CoPyClBr_2]$, and $PyH[CoPyCl_3]$. The complex compounds $[CoPy_4Cl_2][CoPyCl_3]$ and $[CoPy_4Cl_2][CoPyClBr_2]$ were synthesized for the first time. For the first time hexapyridine cobalt bromide $[CoPy_6]Br_2$ was isolated, in the form of red-violet crystals.

Card 2/3

The Oxidation of Pyridine-containing Complex Compounds of Divalent Cobalt SOV/78-4-4-8/44

A table gives the results of the molecular weight determination for the compound $CoPy_2Br_3$ by the Rast method. There are 1 table and 10 references, 3 of which are Soviet.

SUBMITTED: January 13, 1958

Card 3/3

SOV/78-4-5-16/46

5(4)

AUTHORS: Belova, V. I., Babayeva, A. V.

TITLE: Magnetic Susceptibility of Diacidodipyridine Nickel Compounds (Magnitnaya vospriimchivost' diatsidodipiridinnikelevykh soyedineniy)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5, pp 1043-1046 (USSR)

ABSTRACT: Magnetic susceptibility of diacidodipyridine nickel compounds in the solid and dissolved states was investigated. Special interest was devoted to the mixed diammines $NiPy_2NO_2Cl.2H_2O$ and $NiPy_2NO_2Br.2H_2O$. The compounds were obtained by crystallization from methanolic solutions of $NiPy_2Cl_2$ or $NiPy_2Br_2$ with $NiPy_2(NO_2)_2.2H_2O$. The magnetic susceptibility of the following nickel diammines was measured and shown in table 1: $NiPy_2Cl_2$, $NiPy_2Br_2$, $NiPy_2(NO_2)_2.2H_2O$, $NiPy_2C_2O_4$, $NiPy_2(NCS)_2$, $NiPy_2NO_2Cl.2H_2O$, $NiPy_2NO_2Br.2H_2O$. The magnetic susceptibility of the solution $NiPy_2(NO_2)_2.2H_2O$ was measured in methyl alcohol,

Card 1/2

results are shown in table 2. The magnetic susceptibility of solutions of dihalogen- and nitrohalogen diammine nickel in methyl alcohol is shown by table 3. The experiments show that the magnetic susceptibility of diammine solutions in a methyl alcohol solution does not change. The magnetic susceptibility of diammine-thiocyanate-nickel compounds is given by table 4. The structural investigations carried out show that the nickel diammines probably have an octahedral structure. There are 4 tables and 10 references, 4 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR
(Institute for General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

SUBMITTED: February 28, 1958

5 (2)

AUTHORS: Babayeva, A. V., Golovnya, V. A., Nazarova, L. A. SOV/78-4-8-7/43

TITLE: On Complex Compounds of Platinum and Dichloro Diethyl Sulphide (O kompleksnykh soyedineniyakh platiny s dikhlordietilsul'fidom)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1741 - 1746 (USSR)

ABSTRACT: In contrast to thiourea and organic monosulphides (R-S-R) dichloro diethyl sulphide $S(C_2H_4Cl)_2$, termed also as yperite, is capable of entering the internal sphere of the platinum complex compound only with maximally two molecules and it is not capable of substituting ammonia or amines. The platinum complex compounds of yperite are very unstable, an yperite molecule is easily separated by heating. Yperite reacts especially easily with acido complex compounds of platinum. With $K_2[PtCl_4]$ it forms an almost quantitative precipitate of the composition $Pt2S(C_2H_4Cl)_22Cl$ the trans-form of which was confirmed by the reaction with NH_3: amino-thioglycol-electrolyte

Card 1/2

On Complex Compounds of Platinum and Dichloro Diethyl Sulphide SOV/78-4-8-7/43

$[PtS(C_2H_4OH)_2(NH_3)_3]Cl_2$ is formed. NH_3 thus has not only displaced the two chlorine substituents but also one molecule of yperite which may be explained by the trans-effect. The saponification of yperite into thioglycol took place due to the NH_3 excess. With $K_2[PtNO_2Cl_3]$ yperite reacts under formation of $[Pt2S(C_2H_4Cl)_2NO_2Cl]$ with cis-configuration, as was proved by the reaction with pyridine, Since yperite is not capable of displacing NH_3 from the platinum complex compounds it substitutes the two chlorine atoms in cis-position in the cis-dichloro diamino platinum. Also in the reactions with tetravalent platinum only two yperite molecules act and are saponified. It was found that under the action of pyridine a mixture of cis- and trans-isomers is formed. There are 6 Soviet references.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

SUBMITTED: May 16, 1958

Card 2/2

5(2) SOV/78-4-8-38/43

AUTHORS: Babayeva, A. V., Baranovskiy, I. B.

TITLE: On Monoamines of Divalent Cobalt (O monoaminakh dvukhvalentnogo kobal'ta)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1931-1932 (USSR)

ABSTRACT: The substitution reactionsin the inner sphere of the tetrahedral complex PyH $[CoPyCl_3]$ (Py = pyridine) were investigated for the production of monopyridine compounds with different acid substituents. The crystallizing compounds PyH $[CoPyBr_3]$ and PyH $[CoPyJ_3]$ were obtained. In the paper by L. Katzin and E. Gebert (Ref 2) bands at 595 and 665 mμ were observed in the spectrum of solutions of $CoCl_2$, LiCl and pyridine in acetone which were ascribed to the ion $[CoPyCl_3]^-$. The spectrum of an acetone solution of PyH $[CoPyCl_3]$ recorded by the authors showed the same bands. In the substitution of chlorine by bromine and iodine a bathocromic shifting takes place in the

Card 1/2

spectrum (Fig 1). With potassium thiocyanate the compounds $CoPy_2(NCS)_2$ and $(PyH)_2[Co(NCS)_4]$ were obtained. The reaction between $PyH[CoPyCl_3]$ with sodium or silver nitrite yielded the compound $CoPy_2(NO_2)_2$. As was described in an earlier paper (Ref 3) the anion $[CoPyCl_3]^-$ and the cation $[CoPy_4Cl_2]^+$ produce the difficultly soluble compound $[CoPy_4Cl_2][CoPyCl_3]$. This compound may be obtained also by mixing the alcoholic solutions of $[CoPy_4Cl_2]Cl$ and $CoPy_2Cl_2$. By using this reaction the complex compound was obtained with a monoquinoline-anion: $[CoPy_4Cl_2][CoQuinCl_3]$. The attempt of substituting the pyridonium ion in $PyH[CoAminX_3]$ by another cation as $[CoPy_4Cl_2]^+$ failed because either pyridine is substituted in the anion or because unstable compounds are formed. There are 1 figure and 3 references, 1 of which is Soviet.

SUBMITTED: March 5, 1959

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S/078/60/005/03/044/048
B004/B005

AUTHORS: Babayeva, A. V., Baranovskiy, I. B.

TITLE: Complex Compounds of Bivalent Cobalt With Different Amines in the Inner Sphere

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 3, pp 749-751 (USSR)

ABSTRACT: The authors give a short survey of publications on the complex compounds of Co(II) with pyridine (Py), hydrazine, ethylene diamine (En), and thiourea (Thio), and mention M. G. Akhmedli and E. A. Bashkirov (Ref 7). They produced the compound $CoPyThio_2Cl_2$ by boiling a solution of $CoPy_2Cl_2$ in absolute methyl alcohol with thiourea. The yield was 91.2%. The compound melts under decomposition at 107 - 109°. Its blue crystals suggest a tetrahedral structure with the coordination formula $[CoPyThio_2Cl]Cl$. The molecular electrical conductivity in methyl alcohol is indicated. Sodium rhodanide causes a transformation into a mixture of $CoPy_2(NCS)_2$ and $CoThio_2(NCS)_2$. $CoPyThio_2Br_2$ was produced in the same manner. The compound $CoPyEnCl_2.H_2O$ was

Card 1/2

S/078/60/005/06/03/030
B004/B014

5.2620

AUTHORS: Babayeva, A. V., Kharitonov, Yu. Ya.

TITLE: Infrared Absorption Spectra of Polycrystals of Nitrohalides of Bivalent Platinum in the Range of the NaCl Prism

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 6, pp. 1196 - 1207

TEXT: By way of introduction, the authors offer a detailed survey of research work concerning the infrared spectra of the complex compounds of Co^{III}, Ni^{II}, Pt^{II}, and Pd^{II} (Refs. 1-14). Here, they investigated the infrared spectra of complex compounds of the type $K_2[PtX_n(NO_2)_{4-n}]$, where $X = Cl, Br, I$, $n = 0,1,2,3$. Since there occurred no absorption bands (due to vibrations of heavy Cl-, Br-, and I-atoms) in the infrared region investigated, anf since moreover no considerable interactions were to be expected between X and NO_2, the authors assumed that the infrared spectra of platinum nitrohalides in the region 2 - 15 μ would represent the 4

Card 1/4

Infrared Absorption Spectra of Polycrystals of Nitrohalides of Bivalent Platinum in the Range of the NaCl Prism

S/078/60/005/06/03/030
B004/B014

spectrum of the coordinated NO_2 group. They investigated the compounds $K_2[PtCl_3NO_2]$ (I), cis-$K_2[PtCl_2(NO_2)_2]$ (II), $K_2[PtCl(NO_2)_3]$ (III), cis- and trans-$K_2[PtBr_2(NO_2)_2]$ (IV and V), trans-$K_2[PtI_2(NO_2)_2]$ (VI), $K_2[Pt(NO_2)_4]$ (VII), and the palladium compound $K_2[Pd(NO_2)_4]$ (VIII). The compounds were produced by the methods described in publications (Refs. 22-28, among them papers by I. I. Chernyayev, A. A. Grinberg, and G. A. Shagisultanova). The crystalline samples were suspended in paraffin oil, and the spectrum was taken by means of the ИКС-11 (IKS-11) infrared spectrometer with NaCl prism. Table 1 lists experimental results. The authors compare their results with those obtained by K. Nakamoto, J. Fujita, and H. Murata (Ref. 13), and discuss the position of the fundamental vibrations of the NO_2 group. The absorption bands of the internal deformation vibrations $\delta(NO_2)$ (Fig. 1) are in the region 820 - 850 cm^{-1}, those of the symmetric stretching vibrations $\nu_s(NO)$ are in the region 1315 - 1350 cm^{-1}, and those of the antisymmetric stretching vibrations

Card 2/4

$\nu_{as}(NO)$ are in the region 1360 - 1440 cm^{-1}. The other frequencies found in the spectra are indicated as follows: the wagging oscillations $\rho(-NO_2)$ in the region 640 - 650 cm^{-1} (Fig. 2) in accordance with Ref. 13; furthermore, the two combination frequencies (not observed as yet) in the region 1100 - 1200 cm^{-1} (Fig. 3), which are defined as harmonic vibrations $2\rho(-NO_2)$. In the region 2570 - 2710 cm^{-1} a doublet band (Fig. 4) defined as $2\nu_s(NO)$, and in the region 2680 - 2710 cm^{-1} a band defined as $2\nu_{as}(NO)$. These definitions are confirmed by a comparison with the spectra of Co^{III}, Pd^{II}, and Ni^{II} nitrocomplexes (Table 2). The influence of the structure factor upon the infrared spectrum is shown in Table 3. A change in the state of the NO_2 group in the sequence NO_2, Cl $\rightarrow$ Br proceeds from the spectra of cis-$K_2[PtX_2(NO_2)_2]$ (X = NO_2, Cl, Br). A change in the state of the NO_2 group in the sequence $NO_2 \rightarrow Br \rightarrow I$ proceeds from the 4

Infrared Absorption Spectra of Polycrystals of Nitrohalides of Bivalent Platinum in the Range of the NaCl Prism

S/078/60/005/06/03/030
B004/B014

spectra of trans-$K_2[PtY_2(NO_2)_2]$ (Y = NO_2, Br, I). In the case of nitrochlorides $K_2[Pt(NO_2)_nCl_{4-n}]$, n = 1 to 4, the frequency of the nitro group in the region 630 - 650 cm^{-1} is chiefly dependent on the ligand Z (Z = Cl, NO_2) in the direction of the coordinate Z - Pt ··· NO_2. There are 4 figures, 3 tables, and 28 references: 5 Soviet, 5 American, 10 British, 1 Swedish, 4 German, and 3 French.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

SUBMITTED: September 1, 1959

Card 4/4

BABAYEVA, A.V.; CHZAN SHOU-GAN [Chang Shou-kang]

Reactions of pyridine-containing complex compounds of nickel with thiourea. Zhur. neorg. khim. 5 no.10:2167-2173 O '60.
(MIRA 13:10)

(Nickel compounds) (Urea)

BABAYEVA, A.V.; CHZHAN SHOU-GAN [Chang Shou-kang]

Substitution reactions in complex compounds in divalent nickel.
Zhur. neorg. khim. 5 no.10:2174-2183 O '60. (MIRA 13:10)
(Nickel compounds) (Substitution (Chemistry))

BABAYEVA, A.V.; YAN VEY-DA [Yang Wei-ta]

Complex compounds of nickel with thiourea. Zhur. neorg. khim. 5 no. 12:2735-2741 D '60. (MIRA 13:12)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova Khimicheskiy fakul'tet.
(Nickel compounds) (Urea)

ABAYEVA, A.V.; YEVSTAF'YEVA, O.N.

Infrared spectra of acidoammines of divalent platinum and the trans effect. Zhur. neorg. khim. 6 no.1:61-70 '61. (MIRA 14:2)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurakova Akademii nauk SSSR.

(Platinum compounds--Spectra)

.. A..VA, A.V.; ..A.ANOVSKIY, I.B.

Tripyridine complex com..unds of tirvalent cobalt. Zhur. neor.. Khim. 6 no.1:225-227 '61. (MIRA 14:2)
(Cobalt compounds) (Pyrirdine)

S/078/61/006/004/009/018
B121/B216

AUTHORS: Belova, V. I., Syrkin, Ya. K., and Babayeva, A. V.

TITLE: Magnetic susceptibility of nickel complexes

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 4, 1961, 830-834

TEXT: The magnetic susceptibility of 25 freshly prepared nickel complexes containing ammino groups was measured at 293°K and at 78°K. The results are recorded in Table 1. The synthesis of these complexes is described in Ref. 6 (A. V. Babayeva, Yang Wei-ta, Zh. neorgan. khimii, 5, 2735 (1960); A. V. Babayeva, Chang Shou-kang, Zh. neorgan. khimii, 5, 2167, 2174 (1960)). Of the various ammines studied, only $Nitu_4SO_4CH_3OH$ was not paramagnetic. Repeated measurements showed that its susceptibility varied considerably (Table 3). Susceptibility measurements on the compound $Nien_2(NO_2)_2$ were also carried out at higher temperatures (Table 2). At 130°K the compound exhibits a thermochromic effect (from blue-purple to red). The magnetic properties and X-ray patterns of the nickel amines show that the formation of octahedral complexes with $4s4p^34d^2$ bonds is

Card 1/2

characteristic of nickel. The tendency of nickel towards octahedral coordination is demonstrated by M. A. Poray-Koshits (Ref. 8: M. A. Poray-Koshits, E. K. Yukhno, A. S. Antsyshkina, and L. M. Dikareva, Kristallografiya, 2, 371 (1957)) et al. by using $Ni(NH_3)_3(NCS)_2$ as an example. In the latter complex, a thiocyano group forms a bridge between two nickel atoms by forming an Ni - N and an Ni - S bond. Further, the magnetic susceptibility of $Rb_2NiCl_4 \cdot 1.6H_2O$ and Rb_2NiCl_4 was measured at different temperatures (Table 4). The latter compound was supplied by M. A. Poray-Koshits. The authors thank M. A. Poray-Koshits for his advice and interpretation of the structure of the nickel compounds, and G. G. Afanas'yev, Yang Wei-ta and Chang Shou-kang for preparing and analyzing the initial substances. There are 4 tables and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of Sciences USSR)

BABAYEVA, A.V.; VAN YUY-BIN'; USHAKOVA, N.I.

Isomery of bromonitroplatinates. Zhur. neorg. khim. 6 no.7:1525-1533 Jl '61. (MIRA 14:7)
(Bromoplatinic acid)

BABAYEVA, A.V.; BARANOVSKIY, I.B.

Transeffect of some additives in trivalent cobalt complex compounds.
Zhur.neorg.khim. 6 no.8:1786-1790 Ag '61. (MIRA 14:8)
(Cobalt compounds)

BABAYEVA, A.V.; KHARITONOV, Yu.Ya.; NOVOZHENYUK, Z.M.

Infrared absorption spectra of complex compounds of iridium (III) with an inner-sphere sulfito group. Zhur.neorg.khim. 6 no.10: 2263-2280 O '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova Akademii nauk SSSR.

(Iridium compounds--Spectra)

BABAYEVA, A.V.; KHARITONOV, Yu.Ya.; NOVOZHENYUK, Z.M.

Infrared absorption spectra of complex compounds of platinum (II) with an inner-sphere sulfito group. Zhur.neorg.khim. 6 no.10: 2281-2287 O '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova Akademii nauk SSSR.

(Platinum compounds--Spectra)

KHARITONOV, Yu.Ya.; NI TSZYA-TSZAN' [Ni Chia-tsan]; BABAYEVA, A.V.

Structure of "anomalous" aminonitrile complex compounds of bivalent platinum. Dokl. AN SSSR 141 no.3:645-648 N '61. (MIRA 14:11)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN SSSR. Predstavleno akademikom I.I. Chernyayevym.

(Platinum compounds)
(Amines)

BABAYEVA, A.V.; RUDYY, R.I.

Kinetics of substitution of a nitro group for chlorine in trans-[Pt$(NH_3)_2NO_2Cl$]. Zhur.neorg.khim. 6 no.11:2457-2461 '61. (MIRA 14:10)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Platinum compounds) (Nitro compounds)
(Substitution (Chemistry))

BABAYEVA, A. V.

"Trans-effect series of some ligands in cobalt (III) complexes"
Report submitted but not presented at the 7th International conference on Coordination Chemistry, Stockholm/Uppsala, Sweden, 25-29 June 62

akad. Nauk, Moscow

BABAYEVA, A.V.; USHAKOVA, N.I.

Platinum tetrammine salt of trichlorotrihydroxoplatinic acid.
Zhur.neorg.khim. 7 no.3:487-489 Mr '62. (MIRA 15:3)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Platinum compounds)

BABAYEVA, A.V.; BARANOVSKIY, I.B.

Complex compounds of cobalt (III) with a sulfite group in the inner sphere. Zhur.neorg.khim. 7 no.4:783-790 Ap '62.
(MIRA 15:4)
(Cobalt compounds) (Sulfites)

KHARITONOV, Yu.Ya.; NI TSZYA-TSZYAN' [Ni Chia-chiang]; BABAYEVA, A.V.

Infrared absorption spectra and structure of "anomalous" ammonium nitrile complex compounds of bivalent platinum. Zhur.neorg.khim. 7 no.5:997-1008 My '62. (MIRA 15:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova Akademii nauk SSSR.
(Platinum compounds--Spectra) (Ammonium cyanide)

BABAYEVA, A.V.; KHARITONOV, Yu.Ya.; BARANOVSKIY, I.B.

Infrared absorption spectra of cobalt (III) complex compounds with an inner sphere sulfito group. Zhur.neorg.khim. 7 no.6: 1247-1257 Je '62. (MIRA 15:6)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Cobalt compounds--Spectra)

BABAYEVA, A.V.; KHARITONOV, Yu.Ya.; SHENDERETSKAYA, Ye.V.

Infrared absorption spectra of rhodium (III) complex compounds with an inner-sphere sulfito group. Zhur.neorg.khim. 7 no.7:1530-1537 Jl '62.
(MIRA 16:3)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Rhodium compounds—Spectra)

BABAYEVA, A.V.; DERBISHER, G.V.

Reactions of thiuram with some complex compounds of platinum and palladium. Zhur.neorg.khim. 7 no.12:2689-2692 D '62.
(MIRA 16:2)

(Thiuram disulfide) (Platinum compounds) (Palladium compounds)